

**Applicant: Katrina Schmidt**  
**Application Serial No.: 10/644,450**

**REMARKS**

Claims 26-29, 31, 34, 36-42, and 44 remain in this application with claims 26 and 39 in independent form. Claims 26 and 39 have been amended. Claims 1-25, 27, 30, 32-33, 35, 40, 43, and 45-46 have been cancelled. No new matter is believed to be introduced by way of these amendments.

As an initial note, on the Office Action Summary form, the Examiner has indicated that the drawings filed 20 August 2006 have been accepted. Applicant wishes to clarify that the drawings were filed 20 August 2003 and that no new drawings were filed on 20 August 2006. As such, it is believed that the Examiner intended to accept the drawings filed 20 August 2003. Appropriate correction is requested.

***Interview Summary***

Applicants appreciate the opportunity to discuss the outstanding rejection with the Examiner on September 5, 2007. During the interview, the limitation of reacting a) and b) at the claimed isocyanate index was discussed in connection with the polyurethane foam having characteristics that resulted from the claimed isocyanate index. Specifically, this limitation was discussed in view of the modification of Spitzer et al. and the failure of the modification to disclose each and every feature of the claimed invention. Even though an agreement was not reached, Applicant presents additional remarks below regarding the same. In view of the below remarks, it is believed that the Application is in condition for allowance, which is respectfully requested.

Claims 26-29, 31, 34, 36-39, 41, 42, and 44 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Spitzer et al. (United States Patent No. 5,340,900). The Examiner

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contends that Spitzer et al. discloses preparations of polyurethane products meeting the claims of the subject application. Referring to the isocyanate index limitation, the Examiner further contends that Spitzer et al. discloses employment of customary ratios in the operation of the invention for achieving the reactive effect at column 7, lines 55-63. Thus, the Examiner concludes that it would have been obvious to one of ordinary skill in the art to operate at *other* customary index values beyond the exemplified ranges for controlling well known properties.

Applicant respectfully traverses the §103 rejection. Specifically, Applicant submits that, when modified, Spitzer et al. does not disclose each and every limitation of the claim and do not render obvious any such limitations not disclosed.

Claims 26 and 39 have been amended to clarify that the polyurethane foam is useful as an insulating material in structures. Moreover, such polyurethane foam is dispensed from spraying systems, which are commonly referred to as “spray-in-place”. Referring to paragraph [0014] of the specification as originally filed, spray-in-place foam spraying systems spray two components as a liquid into a desired space and the components begin to rise, cream, and gel forming the polyurethane foam. It is during this process that the subject invention has reduced dripping of the components, which is believed to be from the claimed isocyanate index and volumetric ratio.

With reference to paragraphs [0027] and [0028] of the specification as originally filed, when the resin component and the isocyanate component are reacted as set forth above, the primary amine groups are present in an amount such that unreacted hydroxyl groups remain in the foam. These unreacted hydroxyl groups surprisingly reduce and/or eliminate

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dripping when the polyurethane foam is burned. The polyurethane foam thus meets various flammability safety standards that were previously unlikely. The reduced dripping has not been previously been possible with polyurethane foams that have a lower density, especially when sprayed at volumetric ratios of 1:1, and as such the prior art low density foams do not meet the various flammability safety standards.

Thus, it is reacting the resin component and the isocyanate component at the claimed isocyanate index that provides that the polyurethane foam is open-celled and has a density of less than 1 pound per cubic foot and low water absorption. As set forth in paragraph [0015] of the specification as originally filed and as illustrated in the Examples, water absorption, is the ability of the polyurethane foam to absorb water from any source, such as condensation. Even though the polyurethane foam formed according to the subject invention is open celled, the polyurethane foam exhibits a low amount of water absorption, which is desirable for insulation materials. This low water absorption is highly unexpected, since the polyurethane foam is open-celled and typically open-celled foams absorb large amounts of water.

Referring now to Spitzer et al., Spitzer et al. is directed toward a hardener for the production of polyurethane shaped articles. Spitzer et al. does not disclose any spraying system or spray-in-place foam spraying system. Spitzer et al. does not disclose a foam having a density of less than 1 pound per cubic foot that is open-celled with low water absorption. Spitzer et al. further discloses utilizing an isocyanate number, or index, in a customary amount. Spitzer et al. specifically states:

The reaction mixtures according to the invention comprise the polyisocyanate in the customary amount, in general corresponding to an isocyanate number (quotient of the number of isocyanate groups and the number of groups which can react with isocyanate groups in the reaction

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mixture, multiplied by 100) of between *70 and 130, preferably corresponding to an isocyanate number of between 90 and 110*. A primary amino group here again corresponds to a hydroxyl group. (See col. 7, lines 55-63). [emphasis added]

Even though the Examiner interprets the above paragraph as suggesting other *customary* amounts, Applicants respectfully submit that the *customary* amounts disclosed and suggested is between 70 and 130. Spitzer et al. goes further, i.e., teaches away, from a lower range by disclosing the preferred range is 90 to 110. Additionally, none of the examples of Spitzer et al. are beyond the customary amount disclosed.

The Examiner contends it would have been obvious to operate at other customary isocyanate index values. However, there is a distinction between operating outside of 70 to 130 and presenting an entirely distinct isocyanate index range of from 25 to 60. Spitzer et al. does not disclose, teach, or suggest an entirely distinct and lower isocyanate index range. Instead, it teaches only narrowing the range within 70 to 130. Therefore, there is no teaching or suggestion or motivation to have a range of isocyanate index of from 25 to 60 as claimed. It is submitted that Spitzer et al. even teaches away from such a range as set forth above.

The Examiner's reliance on *Titanium Metals* is misplaced and the rejection should be withdrawn. As set forth in MPEP §2144.05,

Similarly, a *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the *same* properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (Court held as proper a rejection of a claim directed to an alloy of "having 0.8% nickel, 0.3% molybdenum, up to 0.1% iron, balance titanium" as obvious over a reference disclosing alloys of 0.75% nickel, 0.25% molybdenum, balance titanium and 0.94% nickel, 0.31% molybdenum, balance titanium.) [emphasis added].

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Thus, *Titanium Metals* holds that the *same* properties are to have been expected. The properties disclosed in Spitzer et al. are not the same properties disclosed in the subject application. Spitzer et al. is directed toward machinability of a shaped polyurethane article, whereas the subject invention is directed toward a polyurethane foam having a density of less than 1 pound per cubic foot that is open-celled with low water absorption and that is formed from a polyurethane spraying system. Thus, the rejection based on *Titanium Metals* should be withdrawn.

Both of the independent claims also recite that the polyurethane foam is an insulating material for a structure and that is produced from the spraying system as described above. There is no suggestion, teaching, or motivation to modify Spitzer et al. to be used with a spraying system. In fact Spitzer et al., col. 9, lines 28-49, discloses that the two components are mixed together and deposited in a mold to give a curable reaction mixture that is shaped and cured fully to give the shaped article. The shaped article can then be removed and shaped with the aid of drills, milling machines, or saws (*see col. 3, lines 10-12*). Spitzer et al. is silent to the open cell nature, the density, and the water absorption of the shaped article. In other words, Spitzer et al. does not disclose a foam having a density of less than 1 pound per cubic foot that is open-celled with low water absorption.

Viewing Spitzer et al. as whole would disclose to one of ordinary skill in the art that Spitzer et al. merely provides polyurethane shaped articles removable from molds to have improved machining capabilities. One of ordinary skill in the art would not look to Spitzer et al. for a polyurethane foam spraying system producing a polyurethane foam as an insulating material since Spitzer et al. is directed toward the machining of shaped articles formed in

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mold. Additionally, one would not look to Spitzer et al. since Spitzer et al. is silent as to the density, cell structure, and water absorption of the polyurethane shaped article. Thus, one of ordinary skill in the art, upon reviewing Spitzer et al. as a whole, would not be motivated to apply Spitzer et al. in the manner suggested by the Examiner.

In view of the foregoing, it is respectfully submitted that there is no teaching, suggestion, or motivation to modify Spitzer et al. as the Examiner suggests. In fact, there are numerous indicia that teach away from the modification suggested. Even if the modification were appropriate, each and every feature of the claimed invention is not disclosed, taught, or suggested. Therefore, the §103 rejection is overcome and claims 26 and 39 are believed to be allowable. Claims 28-29, 31, 34, 36-38, 41-42, and 44, which depend directly or indirectly from these independent claims, are also believed to be allowable.

Accordingly, it is respectfully submitted that the Application, as amended, is now presented in condition for allowance, which allowance is respectfully solicited. Applicant believes that no fees are due, however, if any become required, the Commissioner is hereby authorized to charge any additional fees or credit any overpayments to Deposit Account 08-2789.

Respectfully submitted

**HOWARD & HOWARD ATTORNEYS, P.C.**

September 17, 2007  
Date

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